T.E. I.T Sem I (CBGS). 28/11/14.

Microcontroller & ES.

QP Code : 14913

(3 Hours) **[Total Marks : 80**

N.B. : (1) Question No. **1** is **compulsory.**
(2) Solve any **three** questions out of remaining **five** questions.
(3) **Assume** suitable data if **necessary.**
(4) **Draw** neat diagrams wherever **necessary.**

1. (a) Define and classify the embedded systems, give few examples of such systems. **5**
(b) Compare AJMP, SJMP, LJMP instructions of 8051. **5**
(c) Explain function of $\overline{PSEN}$ and $\overline{EA}$ pins of 8051. **4**
(d) Describe the principal features of the ARM architecture. **6**

2. (a) Explain Internal memory organization of 8051. **10**
(b) Explain addressing modes of ARM 7 processor. **10**

3. (a) Explain interrupt structure of 8051 in detail. **10**
(b) What is semaphore ? Explain the use of semaphore with respect to embedded operating systems. **10**

4. (a) Write assembly language program for 8051 to multiply two 8 bit numbers stored in external memory locations 4000 H and 4001 H. Send the result on PORT 1 and PORT 3. **10**
(b) Explain CPSR of ARM 7 processor. **10**

5. (a) What do you mean by Task and Task state related to embedded operating systems and also discuss about task control block (TCB) and its data. **10**
(b) Write assembly language program for 8051 to transfer message "ENGINEER" serially at the baud rate of 4800 in mode 1. **10**

6. (a) Explain Smart Card Reader system in detail. **12**
(b) Explain priority inversion problem in Embedded System. How does it is resolved ? **8**
